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RAILROAD BUILDING AS A MODE OF WARFARE.

BY CAPTAIN JOHN McAULEY PALMER, U. S. A.

CAESAR conquered Gaul by building roads. No matter how decisive his victories may have been, their effect could only have been transitory but for the great highways that he continually built in his rear. In warfare against a savage people, if you surround a hostile region with roads the included territory must sooner or later become untenable. The enemy must yield. If you establish lines of communication through and around the fastness of a barbarian, it ceases to be a fastness and he ceases to be a barbarian.

It might also be asserted that Cæsar's whole strategy was merely a policy of road-building. It was not necessary for him, as a rule, to seek the enemy. It was only necessary for him to urge on the road-building. From time to time, combats resulted where the road-building was opposed; but the combat was merely an incident, and, by virtue of the road, was always a Roman victory. Only military force sufficient to guard the road was needed.

But Cæsar's highways were something more than mere engines of conquest. The Roman road civilized as it conquered; the barbarian ceased to be barbarous, and a single generation found Gaul converted from a savage wilderness into one of the most peaceful and prosperous of the Roman provinces.

It is probable, even in the most barbarous societies, that a majority of the population would accept the benefits of peace and commerce if they could. They are not industrious, in many cases, because they are not secure in the enjoyment of the rewards of industry. It is generally only necessary to check the nomadic tendency in order to start the work of civilization. Better communication gives security to the industrious element of the population, in proportion as it brings insecurity to the migratory and warlike. Thus it was that, as depredation and brigandage ceased to be profitable, people began to settle in the shelter of the great Roman road, while the incorrigible barbarian was driven farther and farther away.

It is possible that a Roman statesman, in Cæsar's day, would have justified the cost of the military roads merely from the standpoint of military economy. That they might become highways of commerce was but a secondary consideration. Their cost was justified because they reduced the cost of the Transalpine garrison. No other military expenditure could have brought anything like the same return. A legion, in a region of good roads, could police and control many times as large an area as it could in a trackless wilderness.

Before the highways were built, the radii of military influence extended but a few miles from the military base; but, with the highways built, the area of the pacified zone was increased an hundred fold. In other words, the system of roads enormously increased the efficiency of the legions, and therefore were profitable merely from the military standpoint and before they became highways of commerce.

If, by means of the highways, the Transalpine garrison could be reduced from twelve legions to three legions, then, obviously, the highways saved the Roman people the annual charge of nine legions which might either be disbanded or employed in other fields of conquest.

But the most remarkable influence of the Roman roads is found in their effects upon the conquered peoples. In the meshes of the great net-work of highways, migratory tribes became settled communities, wild hunters became husbandmen, the ancient forest gave place to cultivated fields, rough fishing-villages became great cities, warring clans were welded by commercial intercourse into a national whole. A united and civilized France could not have been blended from the heterogeneous tribes of ancient Gaul, save for the influence of the Roman conqueror and the Roman road-builder. The Roman arts of peace rested upon a consummate art of war.

Cæsar's strategy has been followed by all conquerors and pacifiers who have left a lasting impress upon history. The later Romans pushed the paved road from the English Channel to the Welsh mountains and to the foot of the Scottish Highlands, extending commerce and civilization with their military power.

The British have at once conquered and developed India by a system of railroads and highways. It is by virtue of these communications that a small European garrison can hold the millions of India in subjection.

If President Diaz has given Mexico a new era of security and prosperity, it is largely through his military wisdom in laying iron rails. The profession of fomenting revolutions cannot thrive in the land of the locomotive. A military unit that can move 200 miles in a day is vastly more efficient than one that can move but twenty miles.

When the Cape to Cairo railroad is completed the "Dark Continent" will no longer exist as such, Africa will be cut in two, and the remaining fragmentation will take but a little time. Tribes that are capable of receiving civilization will prosper, the others will disappear.

But perhaps the military effect of the highway has never been exemplified more remarkably than in the history of the United States. A little more than a century ago, the whole continent was a wilderness, save for a little fringe of civilization on the Atlantic seaboard. The wilderness was sparsely peopled by savages, who opposed every westward step, and who, unlike the savages of Gaul, were incapable of accepting civilization. Here, as before, the white man advanced on roads, clearing the forest and building villages as he advanced; and here, as before, savagery could not abide where the highway had penetrated. For a time, the progress was relatively slow, principally because the roads were bad; but, when the railroad became the white man's highway, his conquering progress became unparalleled. Forty-five years ago, the region west of the Missouri river was an unconquered wilderness. In less than ten years, it was practically subdued. The Pacific railroads stretched as yokes of steel across the continent; and unorganized bands of settlers, with the railroad at their back, achieved a military conquest that Cæsar and his legions would have found impossible.

The commercial effects of the Pacific railroads have been so great that we are too apt to forget their military aspect. But, if we attempt to compute the cost of securing the same military results without the railroads and by purely military means, we will find that the railroad is the most potent engine of modern war. We conquered the West so easily with the railroads that we cannot realize the amount of military effort that the railroads saved.

The railroad is not only an efficient weapon but a cheap one. It costs a million dollars a year to maintain a regiment of infantry in the field. The same sum will maintain and pay interest on 300 miles of railroad, even if it does not carry a ton of revenue freight. If a general had to advance 300 miles through a wilderness, and were given the choice between an extra regiment of infantry or a railroad leading to his destination, he would probably be willing to spare the regiment. Even if the enemy should burn his bridges from time to time, even if he should find it necessary to rebuild parts of the line and to patrol it from end to end, he could subdue the country incalculably more quickly, more cheaply and more permanently with the railroad than without it.

But, unlike other military weapons, the railroad would pay something toward its support. With the country once subdued, its revenues would increase. In a little time, it would pay its operating expenses. Soon it would pay the interest on the outlay, and in due time create a sinking fund and extinguish its cost.

The value of the railroad as an auxiliary in military operations has long been recognized; but a study of the relative economies of railroad construction and of ordinary military operations would seem to point to the conclusion that the railroad ought to be used as the primary and essential tactical device, especially in warfare against an uncivilized enemy. Instead of regarding the railroad as more or less useful, but subordinate to the several military units, would it not be more scientific to regard it as the main engine of war, the ordinary military units being employed merely to guard it and maintain it? If a country is worth the effort of pacifying it, it is also worth railroad development. If the railroad is constructed and maintained through the theatre of war, military operations cannot continue.

If the objective be mere conquest, the railroad would seem to be the most efficient and economical military weapon; but, if the object be the ultimate civilization and elevation of the conquered race, it would seem to be still more appropriate.

Let us suppose that our task is the subjugation and pacification of the island shown in figure 1. The island is mountainous and heavily wooded, and its slopes are traversed by mountain streams; there are no roads, and the country is exceedingly difficult for military operations. The area of the island is about 5000 square miles, and its irregular coast line is between 300 and 400 miles long. Its climate is tropical, and its low, marshy coast is exceedingly unhealthy for civilized soldiers. Communication is very difficult. The beach is generally swampy and impracticable, and coastwise navigation is dangerous and uncertain on account of coral reefs. The only ports are shown at *a, b, c, d,* and *e.* One of these, *a,* is a fair harbor; the others are mere anchorages where landing is impossible, except under favorable circumstances of wind and tide.

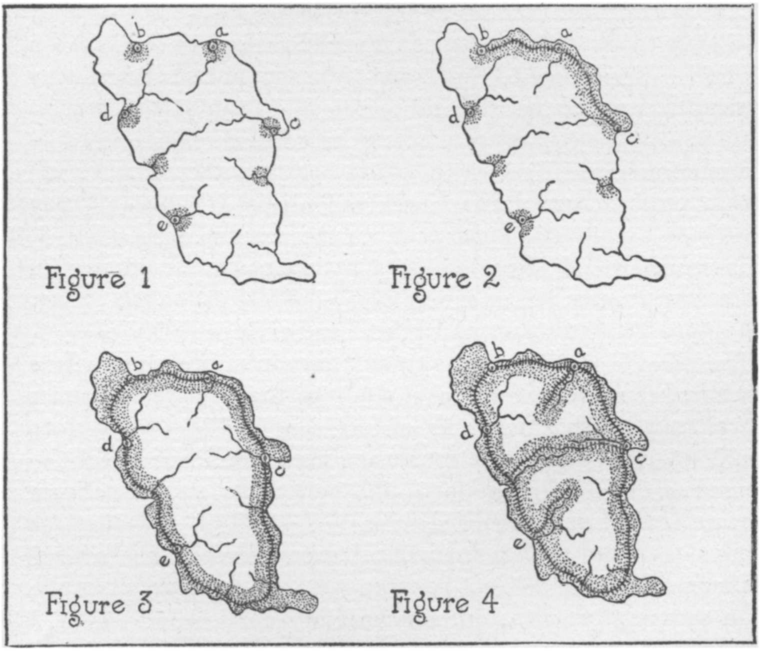

Figure 1

Figure 2

Figure 3

Figure 4

The larger valleys of the island are fertile; and, under ordinary conditions, the valley people are fairly industrious; but, during periods of war, which are frequent, the farmers are in enforced idleness and under a reign of terror.

The enemy occupies the mountains of the interior, while our posts are scattered along the coast and can communicate with each other only with difficulty. On account of the impassable nature of the country, the radius of control of each post is small, and the effect of a successful expedition is only temporary. A village may be captured and destroyed, but it cannot as a rule be occupied, and if occupied its garrison has no communications. Under these conditions, our zones of influence are indicated by the little shaded areas along the coast. The enemy occupies an extended area in the interior, and he can communicate with the sea at many points between our detached and isolated posts. With great loss and exertion, we may break up all organized resistance; but the peace, when it comes, is uncertain, and a successful campaign leaves little basis for the progress of civilization.

Now, suppose a narrow gauge railroad is built merely as a military measure. The location of the line would depend upon the topography of the country; but let us suppose that, in this case, it is proposed to encircle the island, and that the construction is undertaken in both directions from the port *a*. Figure 2 represents the results obtained after the line reaches *b* and *c*. The effect thus far is to control all of the included coast line. This part of the coast will no longer be tenable for the enemy.

Figure 3 shows the condition when the encircling system is complete. The military situation has been entirely changed, and by the construction of only 250 miles of narrow gauge railway.

The annual cost of the investment would be about equal to the annual cost of one regiment of infantry, but it is obvious that our military position would be strengthened much more by the completion of the railroad than by the addition of one more regiment. Our sphere of influence and control would be immediately changed from a few detached and disconnected posts to a wide belt entirely embracing the island. The enemy would be cut off from the coast; our communications would be complete; we could concentrate our reserves in a few hours at any point; our main garrison could be maintained in some healthful place; one base of supplies would serve our whole force; and, whereas the efficiency of our force would be increased an hundred fold, the strain on our men and our loss from sickness would be greatly diminished.

For a time our enemy might dispute the possession of the shore line with us, but very soon he would be forced either to go into the mountains and stay, or to come down and go to work. If he chose the latter alternative, the railroad would bring him employment and would find new markets for the rich products of his forests and fields.

In the case assumed, the construction of the little narrow-gauge railway would almost immediately give us the complete and undisputed possession of more than half of the island. The unsubdued would have only the interior area; but this area would grow smaller with the advance of commerce. The effect of constructing additional transverse lines up the valleys is shown in Figure 4. Each mile of the new line cuts off large tracts of wild land, and brings it under the influence of law and civilization. The strategic advantage of the savage consists only in his independence of communications; with communications established, the strategic advantage passes to the civilized soldier.

Men cannot remain in a savage state in the vicinity of a railroad; they are compelled by irresistible influences either to accept civilization or to withdraw. The railroad brings the lumberman, the prospector and the trader, and these are closely followed by the planter.

When the soldier has prepared the highway of commerce, his work is all but done. The soldier of commerce soon relieves him in the work of reconnaissance and exploitation. It does not follow that the pioneer of commerce must be an European. Whether the trader be an American or a Chinese Mestizo, the effect is the same. He brings with him the idea of property, the magic charm of commerce before which savagery and disorder must disappear.

If the railroad has the great military value indicated above, it might be worth while to consider the probable effect of a government system of railways as a military measure in the Philippines. It is probable that such a system would result in a sufficient saving in the cost of the military occupation, to cover the entire cost of the investment. There can be no question that a system of railways would have a great effect in developing the commercial prosperity of the islands, and that better communication would tend to foster political unity and good government. Whatever may be the ultimate political fate of the islands, it must be the present aim of sound statesmanship to end the war and to develop commerce and industry.

The cost of a railway system adapted to insular conditions need not be very great. The traffic would generally be made up of short hauls, and narrow gauge lines would serve every purpose. The narrow gauge construction involves a cheaper first cost, cheaper maintenance and greater adaptability to surface irregularities.

It is estimated by the Philippine Commission that a system of insular railways can be built at a cost of not more than $35,000 per mile. At three per cent., the interest on the investment would be $1,050 per mile. An annual charge of $3,000 per mile would cover interest, maintenance, and transportation service, even if there were no revenue from traffic.

A railway from Manila to both ends of Luzon would be less than 700 miles long. A system of 1,000 miles would bring every important point of Luzon within one day's journey of Manila. This service would cost but $3,000,000 per annum, but a small percentage of the present cost of military occupation.

But this annual cost assumes no revenue at all from traffic, a condition that would not exist even at the beginning. It would not be long before the system would more than meet its annual charges. One thousand miles of railway for an area of 45,000 square miles and a population of 4,000,000 would be a small proportion, even in the tropics. The State of Illinois, with a population of 5,000,000, supports 11,000 miles of railway.

It seems almost certain that, as a mere military measure, and with no idea of investment, a government system of railroads in Luzon would pay. It would enormously increase the efficiency of the military garrison, and would greatly decrease the cost of the transport of supplies. It would probably pay the United States to build such a system, even if no commercial business were carried, and even if the American occupation should terminate in ten years.

The same conditions would apply to other islands than Luzon. In some of them, commercial considerations would already justify the construction as a profitable investment; in others, the railroad would be economical as a military and political measure.

It is possible that, in some parts of the archipelago, conditions would justify the building of railways by private corporations; but there are several reasons why it would not be wise or just for the government to relinquish control.

In the first place, on account of obvious military economies, the government can afford to build before conditions are secure enough for private capital.

In the second place, a uniform system of communications covering all parts of the islands would give the most economical service, and would do away with the waste of resources due to unnecessary competing lines. To provide a complete system of private railways, it would be necessary for the government to inaugurate a policy of subsidies, either in the shape of land grants or of a guarantee of interest. This would amount in the end to a gratuitous donation of valuable property to private individuals; for the cost of railways must finally and in every case be paid by the people that use them.

Another consideration is the fact that the government can build the railroads more cheaply, and can therefore give the Filipinos a cheaper service. Private capital will not go into the field merely for interest. Under the private system the railroad must pay dividends as well as interest, and the service will cost the people that much more. The railways of the United States are now supporting upwards of $5,000,000,000 of bonus stocks and bonds in addition to the capital actually invested in them.

As the government would find ample reimbursement in the military and political economies that the railroad would develop, it would be free to adopt a broad and far-sighted transportation policy, independent of the narrow conditions of immediate profit. It is this aspect of government control that gives such great strategic and political value to enterprises like the Siberian Railway.

This paper is not intended as an argument in favor of government ownership of railways as a general proposition. Where the object of a proposed system is purely commercial, it may very properly be regarded as beyond the scope of government investment. But, where the prime objects of the enterprise are military and political, where the problems to be solved are the problems of enlightened statesmanship, where the policy to be pursued involves high moral and humanitarian responsibilities, the advantages of government control should be carefully considered.

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